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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/661,653	09/14/2000	Earl R Ault	IL-10680	9212

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EXAMINER
MONBLEAU, DAVIENNE N

ART UNIT	PAPER NUMBER
2828	

DATE MAILED: 03/14/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application N .	Applicant(s)	
	09/661,653	AULT, EARL R	
	Examiner	Art Unit	
	Davienne Monbleau	2828	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *20 February 2003* .

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,3-6 and 9* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,3-6 and 9* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Paul Ip

PAUL IP
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☒ The proposed drawing correction filed on *12 July 2002* is: a)☒ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Claim Objections

Regarding Claim 3, the word "a" in line 2 should be deleted.

Regarding Claims 1, 3-6 and 9, overall, the claims are very wordy which leads to confusion as to which elements are correlated to each other. Examiner recommends rewording the claims with fewer words (i.e. eliminating repetitive parts that are unnecessary).

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1, 3-6 and 9 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 recites the limitation "said first lasing chamber and said second lasing chamber" in lines 16-17 and lines 19-20. There is insufficient antecedent basis for this limitation in the claim.

Claim 1 recites the limitation "said first lasing chamber and said second lasing chamber" in lines 16-17 and lines 19-20. There is insufficient antecedent basis for this limitation in the claim.

Regarding Claims 1, 3, 5, and 9, the phrase "closed loop circulation system" is misleading. The claims recite first and second loops. However, according to Figure 1, there is only one closed loop circulation system, which may be describe as having two sections, and two lasing chambers. An accurate description is needed.

Regarding Claim 5, the language regarding the circulation loops and the flow channels is confusing. It is not clear which flow channel belongs to which circulation loop. Amending the claim to make it less wordy may improve the clarity.

Further regarding Claim 5, the phrase "wherein said first flow channel and said second flow channel are arranged in opposite direction" is misleading. The channels themselves are opposite one another, but the flow directions are respectively in opposite directions.

Regarding Claim 6, the phrase "arranged in opposite directions" is misleading. The channels themselves are opposite one another, but the flow directions are respectively in opposite directions.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1, 3-6 and 9, to the extent taught and understood, are rejected under 35 U.S.C. 103(a) as being unpatentable over Kocher et al. (U.S. Patent No. 5,307,358) in view of Scheps (U.S. Patent No. 5,307,358) and Chun (U.S. Patent No. 4,654,855). Regarding Claim 1, Kocher et al. teach in Figure 1 a cell for use in a circulating liquid laser comprising a laser chamber/cell (12), a pumping device (22) and a liquid active material. Kocher et al. do not teach trivalent titanium ions dissolved in a liquid host. Scheps teaches in Figure 2 a laser system comprising a gain medium (11) doped with trivalent titanium ions and further teaches in column 12 lines 2-5 that said gain medium might be a liquid. It would have been obvious to one of ordinary skill in

the art at the time of the invention to use the trivalent titanium ions dissolved in a liquid host in Kocher et al., as taught by Scheps, to produce a laser output with a specific wavelength. It is known in the art that the wavelength range over which the laser system operates is determined by the dopant/dopants used in the laser gain medium and the pumping energy. (See Scheps column 5 line 66-68). Kocher et al. do not teach that said pump source (22) is a semiconductor diode. Scheps teaches in Figure 2 that said pump source (12) may be a semiconductor diode). It would have been obvious to one of ordinary skill in the art at the time of the invention to use a diode pump source in Kocher et al., as taught by Scheps, since choosing optimum pumping device involves routine skill in the art. Furthermore, optical pumping sources, such as laser diodes and semiconductors lasers are standard in the art. Kocher et al. teach a circular flow loop but do not teach that there are two discharge regions connected by said loop. Chun teaches in Figure 1A a gas laser system comprising a circular flow loop with two sections and two discharges regions (4), wherein each active region has its own energy source. It would have been obvious to one of ordinary skill in the art at the time of the invention to use the circular loop and two discharge regions in Kocher et al., as taught by Chun, for repetitive operation of the laser (Chun column 1 lines 15-18).

Regarding Claim 3, Kocher et al. teach that a circulation loop comprising a pump (24) and a heat exchanger (26). Chun teaches in Figure 1A a circulation loop comprising two sections, each section having a heat exchanger (7). Thus, one skilled in the art would be able to determine the optimum arrangement (i.e. blowers, pumps, heat exchangers) for gas circulation.

Regarding Claim 4, Kocher et al. teach in columns 1-3 that said circulation system prevents the optical distortion from thermal effects. Furthermore the Applicant states in the

specification on page 16 lines 1-7 that these features for reducing the thermal effect are known in the art.

Regarding Claim 5, see discussions on Claims 1 and 4. Furthermore, Chun teaches in Figure 1A that said flow circulation loop has two sections in which the gas flows in opposite directions.

Regarding Claim 6, the method of a device is not germane to the issue of patentability of the device itself, since the device itself obviously uses the method. Therefore the rejection used on the device in Claims 1 4, and 5, respectively, applies also to the method of the device. Furthermore, regarding the wavelength, it is known in the art that the wavelength range over which the laser system operates is determined by the dopant/dopants used in the laser gain medium and the pumping energy. (See Scheps column 5 line 66-68).

Regarding Claim 9, Kocher et al. teach in Figure 1 a liquid laser device comprising an optical cavity (10), a pumping device (22), a lasing liquid, and a circulation system with a circulation pump (24) and a heat exchanger (26). Kocher et al. do not teach trivalent titanium ions dissolved in a liquid host. Scheps teaches in Figure 2 a laser system comprising a gain medium (11) doped with trivalent titanium ions and further teaches in column 12 lines 2-5 that said gain medium might be a liquid. It would have been obvious to one of ordinary skill in the art at the time of the invention to use the trivalent titanium ions dissolved in a liquid host in Kocher et al., as taught by Scheps, to produce a laser output with a specific wavelength. It is known in the art that the wavelength range over which the laser system operates is determined by the dopant/dopants used in the laser gain medium and the pumping energy. (See Scheps column 5 line 66-68). Kocher et al. do not teach that said pump source (22) is a semiconductor diode.

Scheps teaches in Figure 2 that said pump source (12) may be a semiconductor diode). It would have been obvious to one of ordinary skill in the art at the time of the invention to use a diode pump source in Kocher et al., as taught by Scheps, since choosing optimum pumping device involves routine skill in the art. Furthermore, optical pumping sources, such as laser diodes and semiconductors lasers are standard in the art. Kocher et al. teach a circular flow loop but do not teach that there are two discharge regions connected by said loop. Chun teaches in Figure 1A a gas laser system comprising a circular flow loop with two sections and two discharges regions (4), wherein each active region has its own energy source. It would have been obvious to one of ordinary skill in the art at the time of the invention to use the circular loop and two discharge regions in Kocher et al., as taught by Chun, for repetitive operation of the laser (Chun column 1 lines 15-18).

Response to Arguments

Applicant's arguments with respect to claims 1, 3-6 and 9 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Gurs (U.S. Patent No. 4,635,270) teaches in Figure 1 a gas laser system comprising a circular flow loop and two discharge regions (5). Weiss (U.S. Patent No. 4,704,719), Hongu (U.S. Patent No. 6,208,676), Yamane et al. (U.S. Patent No. 5,450,435) and Morita et al. (U.S. Patent No. 5,742,627) each teach a laser gas system with two circular flow loops and two discharge regions.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Davienne Monbleau whose telephone number is 703-306-5803. The examiner can normally be reached on Mon-Fri 8:00 am to 4:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul Ip can be reached on 703-308-3098. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-7722 for regular communications and 703-308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

Davienne Monbleau

DNM
February 28, 2003

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